

ABSTRACT

An engine control apparatus is disclosed for determining crankshaft position and engine phase of an internal combustion engine (10) through monitoring intake air pressure fluctuations (120). The opening of the intake valve (44) is mechanically linked to the crankshaft position of an engine. When the intake valve (44) opens it creates air pressure fluctuations in the air induction system (14) of the engine (10). The control apparatus is configured to determine intake air pressure fluctuations indicative of an intake air event (100 to 110) and thus a particular crankshaft position, and their corresponding period of the engine cycle. The controller then uses this information to determine crankshaft speed and position for the purpose of fuel injection and ignition timing of the internal combustion engine. Engine phase is also determined on four-stroke engines. The engine may also include a crankshaft position sensor in combination with monitoring intake air pressure fluctuations to increase resolution in determination of crankshaft position.